

WE CLAIM:

1. A dispenser for dispensing fluid comprising:
a housing,
a removable container insertable into the housing to assume a dispensing position and removable from the housing for replacement,
the container carrying a pump having a piston reciprocally slidable along an axis for dispensing fluid from the container with reciprocal axial sliding of the piston,
the piston rotatable about the axis,
a directional nozzle carried on the piston wherein the piston in desired relative rotational positions about the axis directs fluid from the nozzle over desired angular sectors and in undesired rotational position directs fluid from the nozzle over undesired angular sectors,
cam surfaces carried on the piston,
camming surfaces carried on the housing,
wherein on insertion of the container carrying the pump and its piston into the housing, the cam surfaces and camming surfaces engage to rotate the piston about the axis from undesired rotational positions to desired rotational positions.
2. A dispenser as claimed in claim 1 wherein insertion of the container into the housing, the pump and container are oriented with the axis in a predetermined angulation relative a vertical and in such predetermined angulation, the pump and container are slid linearly relative the housing in an insertion direction normal to the axis,
the cam surfaces on the piston comprise surfaces directed radially relative the axis.
3. A dispenser as claimed in claim 1 wherein the piston has a radially outwardly directed flange about which has a circumferential outer surface comprising cam surfaces,

the camming surfaces carried on the housing include members carried on the housing for engagement with the cam surfaces carried on the piston when the piston is slid relative to the housing in an insertion direction,

the camming surfaces engaging the cam surfaces at cylindrically spaced locations,
the camming surfaces disposed spaced from each other a distance less than the greatest diameter through the flange,

engagement between at least one of the camming surfaces and cam surface on one half of the flange which extends beyond the cam surface of the other half of the flange urging rotation of the piston about the axis when the piston is slid in the insertion direction relative to the camming surfaces.

4. A dispenser for dispensing fluid comprising,
a housing,
a reservoir,
the housing supporting the reservoir in a dispensing position,
the reservoir being insertable into said housing to assume said dispensing position and removable therefrom for replacement,
the reservoir comprising:
 - (i) a chamber for retaining fluid having an outlet, and
 - (ii) a valve mechanism disposed across the outlet for dispensing fluid from the chamber, the valve mechanism comprising a reciprocally movable element for reciprocal movement along an axis relative to the housing when the reservoir is in the dispensing position to dispense fluid,
the element including engagement surfaces for engagement with the housing,
the housing including an actuator mechanism for actuating the reciprocally movable element, the actuator mechanism movable relative the housing between a first position and a second position,
the actuator mechanism including a catch mechanism to engage the engagement surfaces and couple the element to the actuator mechanism,

wherein when the reservoir is inserted into the dispensing position, the engagement surfaces and catch mechanism assume relative positions selected from,

(a) a coupled orientation in which the catch mechanism engages the engagement surfaces for reciprocal movement of the element to dispense fluid with movement of the actuator mechanism between the first position and the second position, and

(b) an uncoupled orientation from which on a first cycling of the actuator mechanism between the first position and the second position, the catch mechanism and engagement surfaces are moved relative to each other that they assume the coupled orientation,

the element being rotatable about the axis relative to the housing,

the element carrying a directional nozzle, wherein with the element in desired rotational positions relative the axis directs fluid from the nozzle over desired angular sectors and with the element in undesired rotational positions directs fluid from the nozzle over undesired angular sectors,

cam surfaces carried on the engagement surfaces of the element,

camming surfaces carried on the catch mechanism,

wherein when the reservoir is inserted into the housing to assume the dispensing position with the element in an undesired rotational position, the cam surfaces on the engagement surfaces engage the camming surfaces on the catch mechanism to rotate the element from the undesired rotational position to desired rotational positions.

5. A dispenser for dispensing fluid comprising,
- a housing,
 - a reservoir,
 - the housing supporting the reservoir in a dispensing position,
 - the reservoir being insertable into said housing to assume said dispensing position and removable therefrom for replacement,
 - the reservoir comprising:
 - (i) a chamber for retaining fluid having an outlet, and

(ii) a valve mechanism disposed across the outlet for dispensing fluid from the chamber, the valve mechanism comprising a reciprocally movable element for reciprocal movement along an axis relative to the housing when the reservoir is in the dispensing position to dispense fluid,

the reciprocally movable element including engagement surfaces for engagement with the housing,

the housing including actuator mechanism for actuating the element, the actuator mechanism movable relative the housing between a first position and a second position,

the actuator mechanism including a catch mechanism to engage the engagement surfaces and couple the reciprocally movable element to the actuator mechanism,

wherein when the reservoir is inserted into the dispensing position, the engagement surfaces and catch mechanism assume an uncoupled orientation from which on a first cycling of the actuator mechanism between the first position and the second position, the catch mechanism and engagement surfaces are moved relative to each other that they assume a coupled orientation in which the catch mechanism engages the engagement surfaces for reciprocal movement of the element to dispense fluid with movement of the actuator mechanism between the first position and the second position,

the element is rotatable about the axis relative to the housing,

the element carrying a directional nozzle, wherein with the element in desired rotational positions directs fluid from the nozzle over desired angular sectors and with the element in undesired rotational positions directs fluid from the nozzle over undesired angular sectors,

cam surfaces carried on the engagement surfaces of the element,

camming surfaces carried on the catch mechanism,

wherein on inserting the reservoir into the housing to assume the dispensing position with the engagement surfaces and the catch mechanism in the uncoupled orientation and with the element in an undesired position, the cam surfaces on the engagement surfaces engage the camming surfaces on the catch means to rotate the element from the undesired rotational position to desired rotational positions.

6. A dispenser as claimed in claim 5, the catch mechanism being resiliently to permit movement of the catch mechanism relative the element to facilitate rotation of the element from undesired rotational positions to desired rotational positions.

7. A dispenser as claimed in claim 5, the catch mechanism being resiliently deformable to permit movement of the actuator mechanism relative to the engagement surfaces from the uncoupled orientation to the coupled orientation and to permit movement of the catch mechanism relative the element to facilitate rotation of the element from undesired rotational positions to desired rotational positions.

8. A dispenser as claimed in claim 5 wherein said catch mechanism comprises a first finger member and a second finger member spaced from each other disposed on diametrical locations about the axis , each finger member extending generally parallel the axis,

the finger members spaced from each other to define a slotway extending therebetween extending normal to the axis with an entranceway into which the element is slidable normal to the axis for inserting the reservoir into the housing to assume the dispensing position,

the slotway extending between the fingers along a central slotway centerline radial to the axis,

each finger member having an interior side surface directed into the slotway on each side thereof toward the interior side surface of other finger member to define the slotway therebetween,

each finger member having an edge side surface bordering the entranceway extending away from the entranceway,

the element having a locating portion with an axial extent, the locating portion having diametrical dimensions which vary about the element angularly about the axis,

when the element is in a undesired rotational position the diametrical dimension measured normal the slotway centerline is greater than the spacing of the finger members and on sliding of the locating portion into the entranceway, the locating portion engages the

edge side surface of the finger members with such contact imparting rotation to the element to rotate the element toward the desired rotational positions in which the diametrical dimension measured normal the slotway centerline permits the locating portion to be slid past the edge side surfaces and into the slotway.

9. A dispenser as claimed in claim 8 wherein an end portion of each of said first and second finger members resiliently deformable radially relative the axis away from each other.

10. A dispenser as claimed in claim 5 wherein said element comprises a piston forming element, and the engagement surfaces are provided on a circumferential flange extending radially outward from about an outermost end of the piston forming element.

11. A dispenser as claimed in claim 5, wherein said housing further comprises locating means engaging the actuator mechanism to guide movement of the actuator mechanism between the first position and the second position, and biasing means for biasing the actuation mechanism towards the first position,

said biasing means comprising a compressed helical spring disposed about said locating means.

12. A dispenser as claimed in claim 5, wherein said fluid comprises an alcohol based liquid.

13. A dispenser as claimed in claim 5, wherein the engagement surfaces are carried on a radially outwardly extending engagement flange having a circumferential outer surface between upper and lower axially directed shoulders,

the catch mechanism comprising two resilient deformable fingers disposed diametrically about the flange extending axially from a stop plate and biased radially inwardly into engagement with the circumferentially outer surface;

the fingers having a radially inwardly directed finger flange permitting the engagement flange to slide axially selectively to the fingers from the uncoupled orientation to the coupled orientation in which one of the upper and lower axially directed shoulders engage the stop plate and the finger flange engages the other of the upper and lower axially directed shoulders to prevent movement of the engagement flange axially away from the stop plate;

the fingers and stop plate permitting the engagement flange to slide radially for movement into and out of the dispensing position.

14. A dispenser as claimed in claim 5 wherein said catch mechanism comprises a first locating member and a second locating member spaced from each other disposed on diametrical locations about the axis, the locating members spaced from each other to define a slotway extending therebetween extending normal to the axis with an entranceway into which the element is slidable normal to the axis for inserting the reservoir into the housing to assume the dispensing position,

the slotway extending between the locating members along a central slotway centerline radial to the axis,

each locating member having an interior side surface directed into the slotway on each side thereof toward the interior side surface of other locating member to define the slotway therebetween,

each locating member having an edge side surface bordering the entranceway extending away from the entranceway,

the element having a locating portion with an axial extent, the locating portion having diametrical dimensions which vary about the element angularly about the axis,

when the element is in a undesired rotational position the diametrical dimension measured normal the slotway centerline is greater than the spacing of the locating member and on the locating portion sliding into the entranceway the locating portion engages the edge side surface of one of the locating members with such contact imparting rotation to the element to rotate the element toward the desired rotational positions in which the diametrical

dimension measured normal the slotway centerline permits the locating portion to be slid past the edge side surfaces and into the slotway.

15. A dispenser as claimed in claim 14 wherein each of said first and second locating members more resiliently deformable away from each other.

16. A dispenser as claimed in claim 15 wherein each of said first and second locating members comprise a respective first and second finger member, an end portion of each of said first and second finger members resiliently deformable radially relative the axis away from each other.

17. A dispenser as claimed in claim 16 the locating portion comprises a radially outwardly extending engagement flange having a circumferential outer surface between upper and lower axially directed shoulders.

18. A dispenser as claimed in claim 17, the first and second finger members are disposed diametrically about the engagement flange extending axially from a stop plate and biased radially inwardly into engagement with the circumferential outer surface;

the finger members having a radially inwardly directed finger flange permitting the engagement flange to slide axially selectively relative to the fingers from the uncoupled orientation to the coupled orientation in which one of the upper and lower axially directed shoulders engage the stop plate and the finger flange engages the other of the upper and lower axially directed shoulders to prevent movement of the engagement flange axially away from the stop plate;

the fingers and stop plate permitting the engagement flange to slide radially for movement into and out of the dispensing position.